Czech Guidelines 2017

ESH Guidelines 2018

Czech Hypertension Society

Hypertension

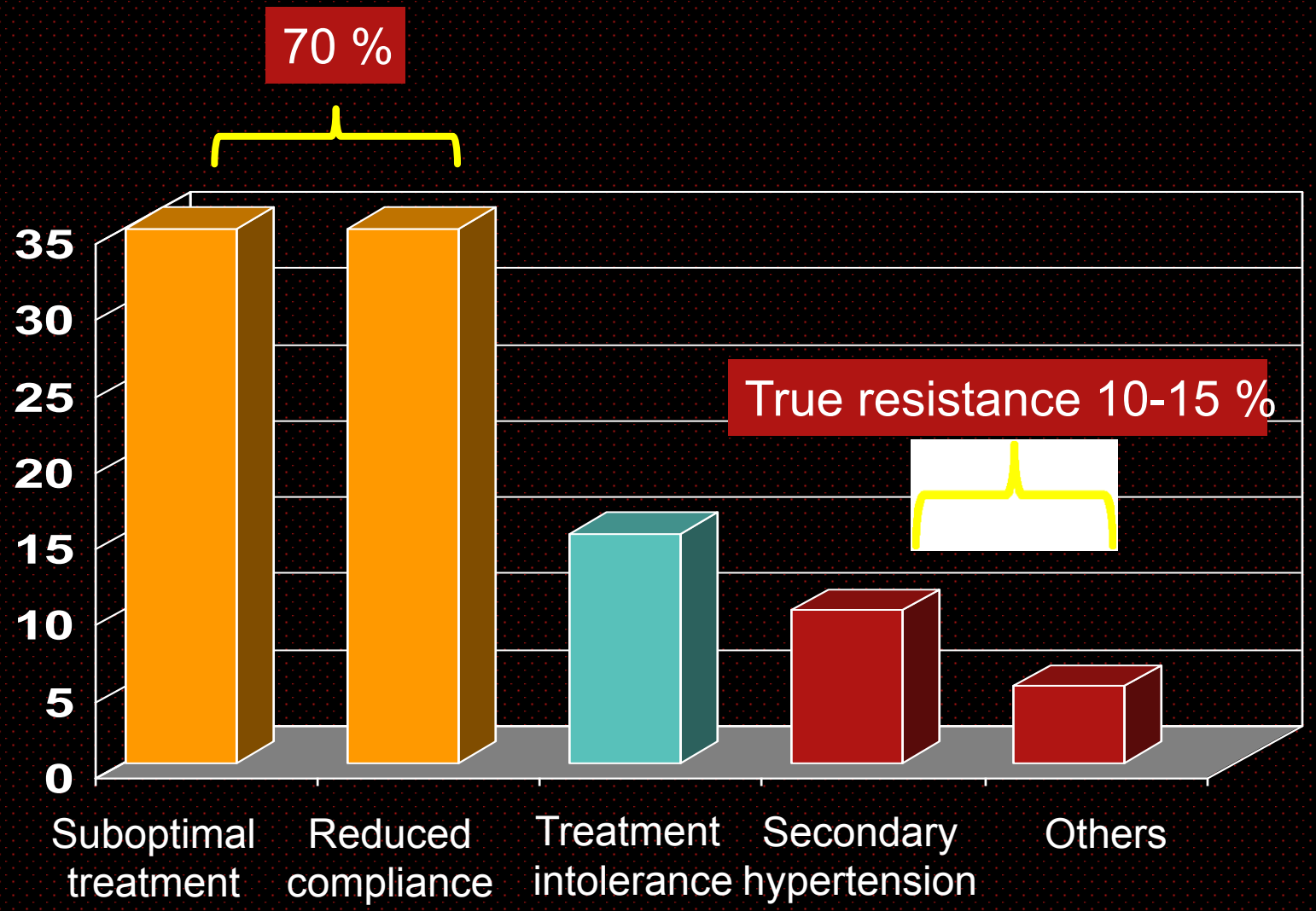
Definition:

Repeated increase of BP ≥ 140 and/or 90 mmHg in 2 measurements in past 2-3 months.

Current situation in Czech republic

60 -70 %	hypertensive patients are treated
45 %	pts treated achieve BP target values
55 %	pts treated don´t achieve BP target values

The most common causes of inadequate treatment



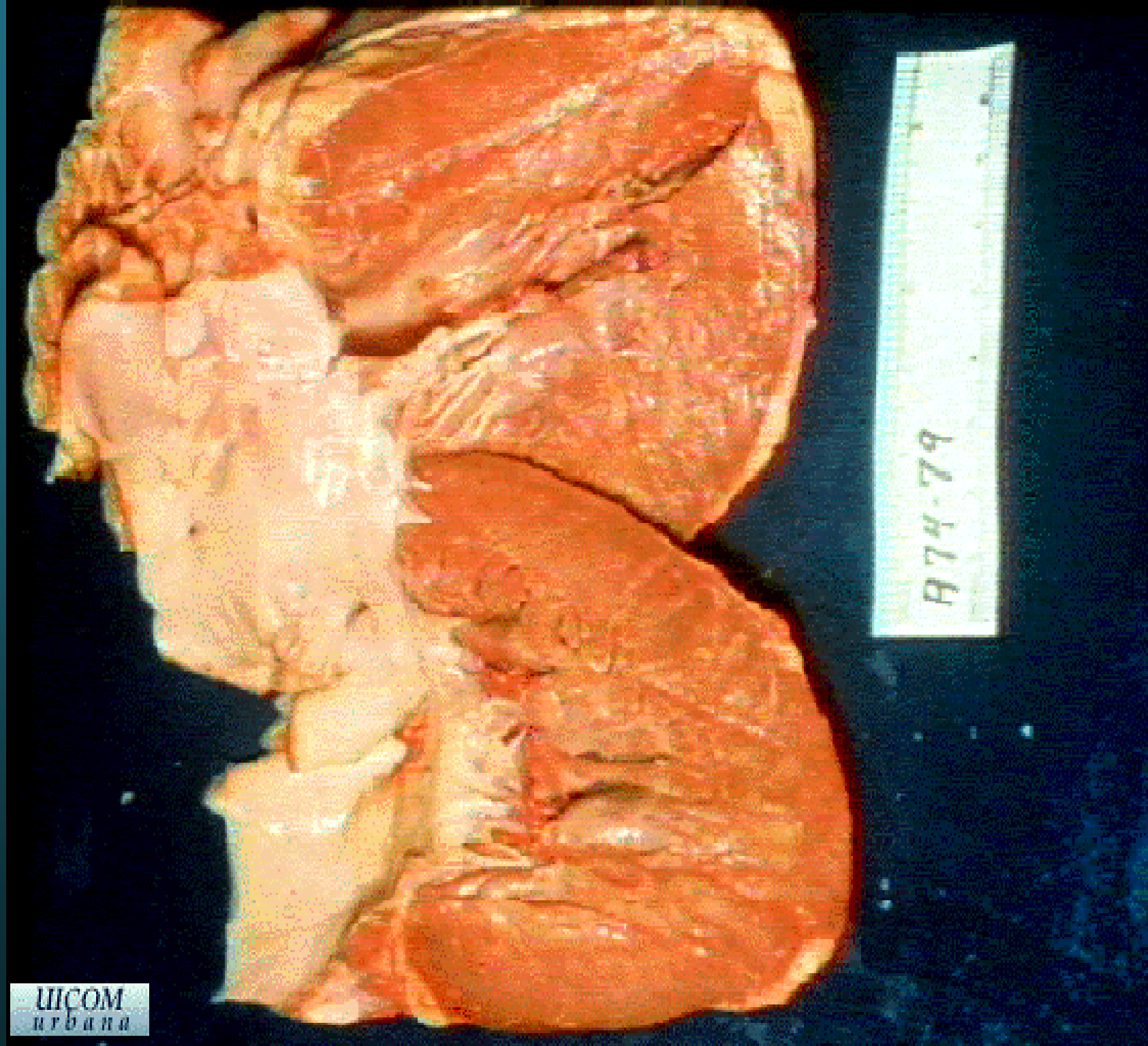
Definitions and classification of BP levels (mmHg) (ESH + CZ)

Category	SYSTOLIC	DIASTOLIC
Optimal	< 120	< 80
Normal	120-129	80-84
High normal	130-139	85-89
Hypertension		
Grade 1 (mild)	140-159	90-99
Grade 2 (moderate)	160-179	100-109
Grade 3 (severe)	≥ 180	≥ 110
Isolated systolic hypertension (ISH)	≥ 140	< 90

Target organs

- Heart
- Brain
- Kidney
- Arteries

- Left ventricular hypertrophy
- (CV risk tripled)



Why we treat hypertension?

Prevalence in Czech republic	35%
Patients over 60 years	> 50%

Reducing SBP by 10 mmHg and DBP by 5 mmHg

reduces stroke risk	by 45%
reduces heart attack risk	by 20%
reduces CV event risk	by 33%

Diagnosis

- Repeated measurement of BP
- Casual BP (in office, measured by physician)
  - Sfygmomanometer (newly without mercury content)
  - Automatic or semiautomatic oscilometric devices
- Home BP measurement (HBPM)
- 24hour ambulantory BP monitoring (ABPM)

BP measurement

Cuff size

Normal cuff size 12 cm : arm circumference below 33 cm
size 15 cm: arm circumference 33- 41 cm
size 18 cm: arm circumference up 41 cm

- **BP accuracy 2 mmHg**

- **BP is measured three times and we take a mean of 2 and 3 measurement**

- **BP device should by calibrated – sphygmomanometer/2 years**
  - other devices/1 year

HBPM

- BP at home – exclusion of hospital environment
- Adequately instructed and cooperating patients
- Higher number of measurements between clinical controls
- Daily profil of BP
  - Morning surge
  - Noon decrease
  - Evening increase
- Adjustment of medication according daily background
- Improved aproach to treatment
- Determination of white coat and masked hypertension

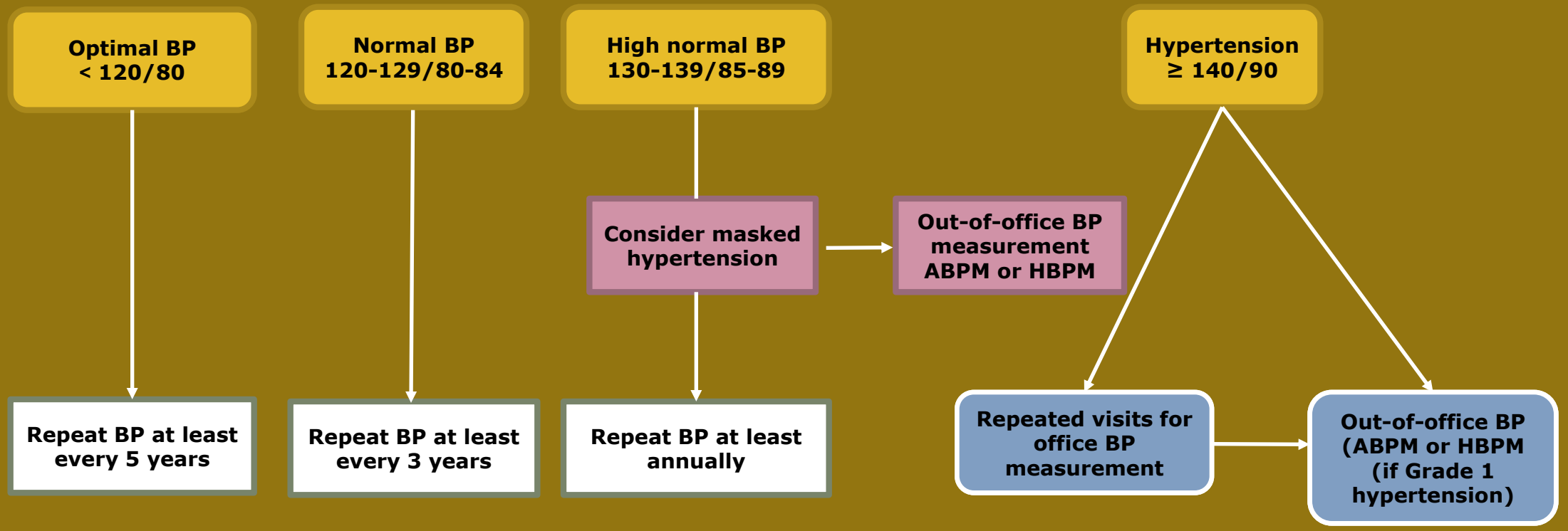
ABPM

- BP in „daily living“
- 70-80 measurements in 24 hours with HR
- Daily and night profile of BP
- White coat hypertension
- Masked hypertension

Definition of hypertension and corresponding BP values (mmHg)

	SBP	DBP
Casual BP	140	90
Home BP	135	85
ABPM		
24h mean	130	80
Asleep mean	135	85
Sleep mean	120	70

Screening and diagnosis of hypertension



Classification of hypertension

- **Etiopatogenetic**

  essential

  secondary

Essential (primary) hypertension (90-95%)

- unknown cause
- polygenic disease
- high impact of external factors
  - salt, obesity, stress, …
- direct connection to metabolic syndrome and type II DM
- familiar disease

Secondary hypertension 5-10%

- Renal parenchymal disease 5%
- Renovascular hypertension 3%
- Endocrine hypertension 0,5 -5%
- Coarctation of aorta < 0,5%
- Neurogenic, stress < 0,5%

- Drugs, chemicals, foods
- Pregnancy (preeclampsia, eclampsia) 5%

Prognostics factors (CV risk stratification)

- Estimate risk of fatal CV events (SCORE)
- Target organ damage
- Established CV disease

High impact to initiation and targets of treatment !!
Not only for hypertension but for DM and hyperlipidemia too.

SCORE
(10 years risk to developing fatal CV event in CR)

SCORE risk assessment:

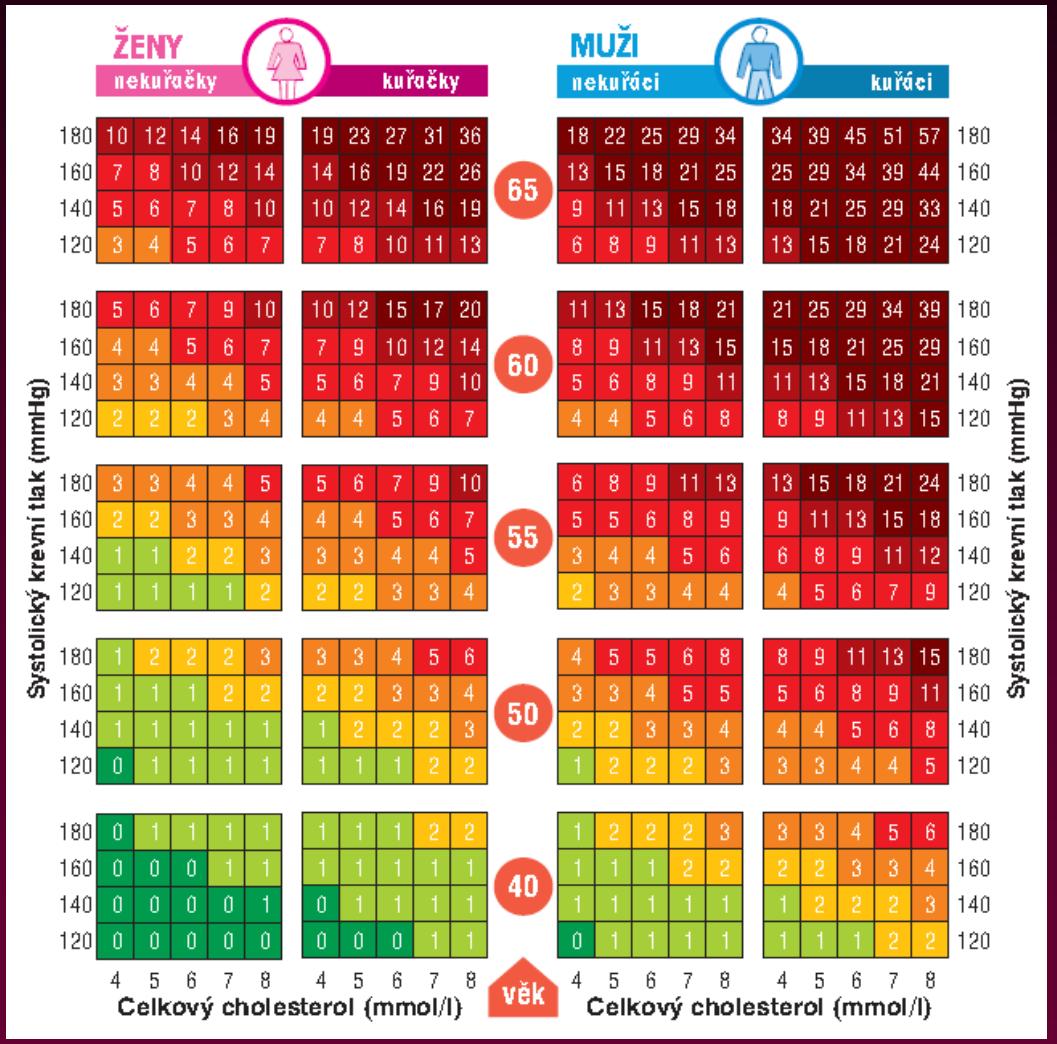
Susceptible

- Levels of SBP
- Levels of cholesterol
- Smoking

Non susceptible

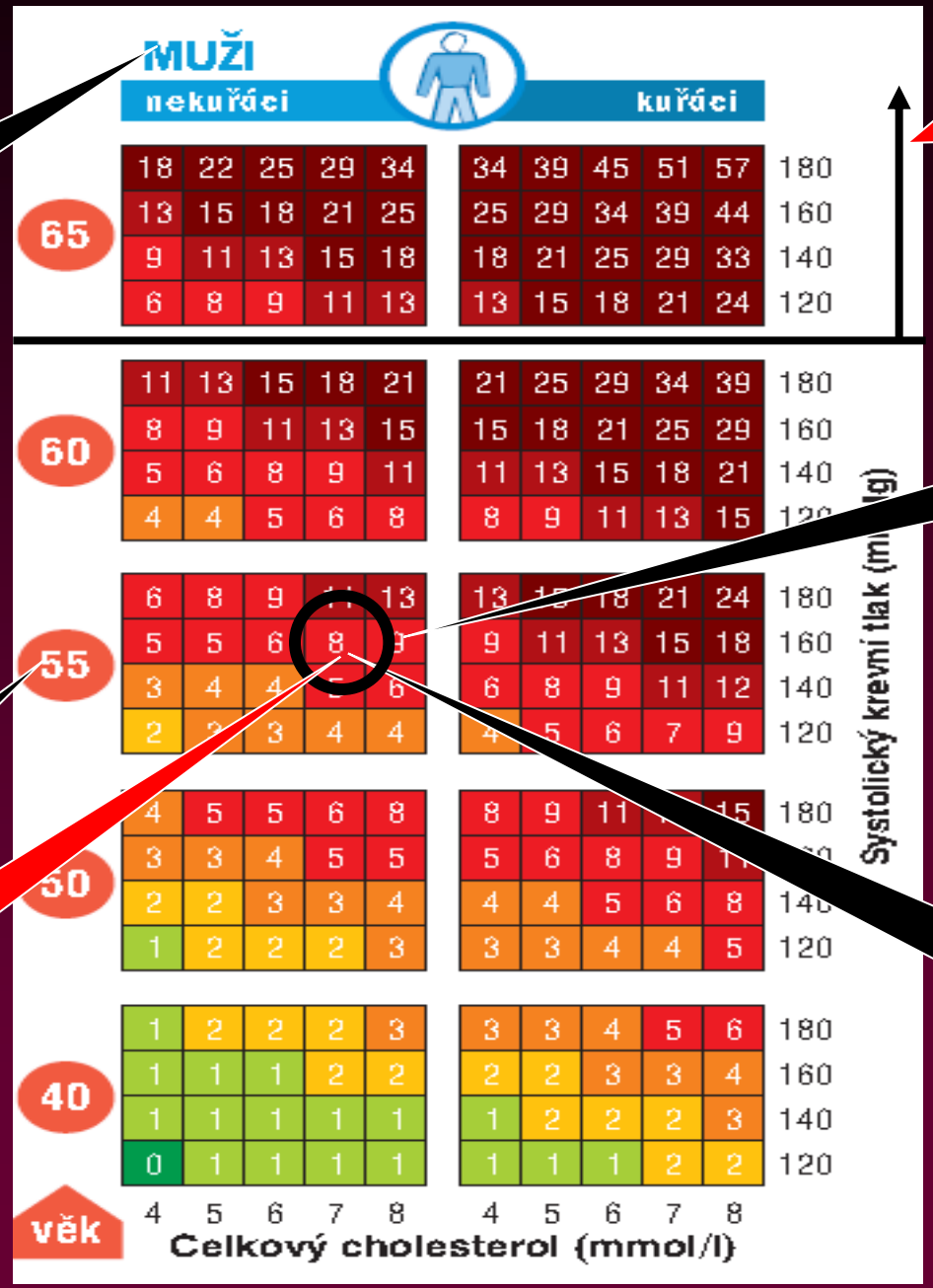
- Age
- Gender

Female Male



Vaverková H. et al.: Doporučení pro diagnostiku a léčbu dyslipidémií; Vnitř Lék 2007; 53 (2):181-197.

Example of SCORE stratification



Male
- nonsmoker

People over 65 years

BP (mm Hg): 155/100

AGE: 53 years

Total cholesterol: 7,0 mmol/l

SCORE RISK: 8 %

Cardivascular risk stratification (SCORE)

SCORE	0 - 1 %	low
SCORE	2 – 4 %	medium
SCORE	5 - 9 %	high
SCORE	≥ 10 %	very high

Podle doporučení Evropské kardiologické společnosti (ESC) – projekt SCORE

Soška V et al. Stanovisko výboru ČSAT k doporučením ESC/EAS pro diagnostiku a léčbu dyslipidemií z roku 2011. Vnitř Lék 2013;59(2):120–126

High risk 5 - 9 %
(extra of SCORE stratification)

Familiar hypercholesterolaemia (LDL ≥ 6 mmol/l)

Diabetes type 1. and 2. without organ damage or other RF

Decreased GFR, stadium G3a or G3b (30-60 ml/min/m2)

Left ventricular hypertrophy (ECHO, ECG)

Soška V et al. Stanovisko výboru ČSAT k doporučením ESC/EAS pro diagnostiku a léčbu dyslipidemií z roku 2011. Vnitř Lék 2013;59(2):120–126

Very high risk ≥ 10 %
(extra of SCORE stratification)

Diabetes type 1. or 2. with albuminuria or micro/macro vascular changes or with other RF (hypertension...)

Established CV disease (IM, CMP ...)

Subclinical aterosclerosis or plaque

Decreased GFR stadium G4 or G5 (below 30 ml/min/m2)

Soška V et al. Stanovisko výboru ČSAT k doporučením ESC/EAS pro diagnostiku a léčbu dyslipidemií z roku 2011. Vnitř Lék 2013;59(2):120–126

Ethnicity and CV risk

assessing CVD risk using SCORE among first-generation immigrants

Southern Asia: multiply the risk by	1.4
Sub-Saharan Africa and the Caribbean:	1.3
Western Asia:	1.2
Northern Africa:	0.9
Eastern Asia or South America:	0.7

Renal failure classification (CKD)

Stadium CKD	Level	GFR (ml/min/1,73 m^2)	Clearens ml/s
G1	**Normal GFR**	**over 90**	**over 1,5**
G2	Mild	60 – 89	1,0 – 1,5
G3a	Medium	40 – 59	0,75 – 0,99
G3b	Medium	30 – 39	0,5 – 0,74
G4	Severe	15 – 29	0,25 – 0,49
G5	Uremia	below 15	below 0,25

Renal failure – GFR below 60 ml/min sustained more than 3 month (formula CKD-EPI)

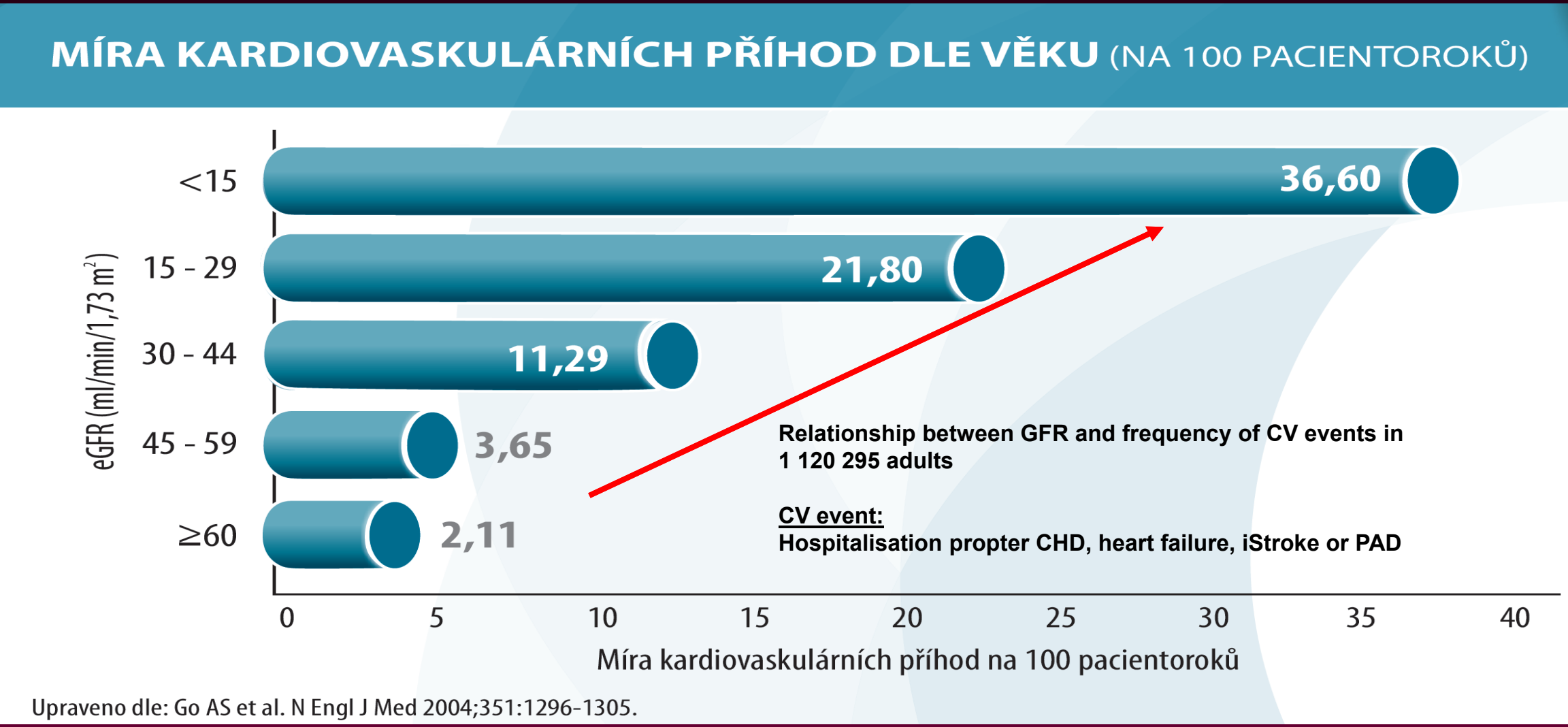
Adapted according Doporučení CNS 2014 - http://www.nefrol.cz/odbornici/doporucene-postupy-cns

GFR, albuminuria and CV risk

Prediction of CKD: formula CKD-epi according eGFR (ml.min^{-1}.1,73m^{-2}) **and albuminuria (mg/mmol creatinine) or (mg/24 hodin)** **Guidelines: KDIGO 2012**		**Class of albuminuria**		
		A1	A2 (albuminuria)	A3 (proteinuria)
		Normal or mild increased	Medium increased	Severe
		< 3 mg/mmol < 30mg/24 h	3 – 30 mg/mmol 30 – 300 mg/24h	> 30 mg/mmol > 300 mg/24h
G1	over 90	Low	Medium	High
G2	60 – 89			
G3a	45 – 59			Very High
G3b	30 – 44			
G4	15 – 29			
G5	below 15			

Adapted according http://www.nefrol.cz/odbornici/doporucene-postupy-cns 2014

Decrease of GFR and CVR



Upraveno dle: Go AS et al. N Engl J Med 2004;351:1296-1305.

Signs of renal disease

Early

Albuminuria: **≥ 30 mg/24** hour or
albumin/kreatinin ratio **≥ 3,0** mg/mmol A2

Mild decrease of GFR: CKD G**2 and G3a**

Advancet

Proteinuria **≥ 150 mg/24** hodin A3

Oliguria and elevated creatinine in plasma

Hypalbuminaemia **< 35 g/l**

Oedema

Newly diagnosed hypertension work up

● Necessary in all	● Need in somebody
Case history	HBPM
Physical examination (with palpation and auscultation of periferal arteries)	Ankle/arm index of BP (> 0,90 normal)
Sitting and standing BP, both upper extremities, one lower extremity	Echocardiography
Urine sample and Albuminuria	USG of carotic or femoral arteries
S-Na^+, S-K^+, S-creat, glycemia, uric acid HGB, HCT	Proteinuria/24h
Calculated GFR (according formula CKD epi)	oGTT if fasting glykaemia is between 5,6 and 6,9 mmol/l
Lipids panel (TCH, HDL, LDL, TG)	Aorto-femoral pulse-wave velocity
ECG, ABPM	

Need to CV risk stratification and to excluding some secondary hypertension causes !!

Targets of treatment

- Maximale decrease of long-term CV risk

- Treatment:
  - all reversible RF and TOD
  - all established CV diseases
  - increased BP

Treatment goal of hypertension

All population	BP below 140/90 mmHg
Diabetes, high risc.	BP near 130/80 mmHg (CSH) BP 120-130/70-80 mmHg (ESH) if tolerated

Treatment target of dyslipiaemia (EAS 2019)

Low risk (□ 1 % SCORE)	Medium risk (≥1 a □ 5 % SCORE)	High risk (≥ 5 a □ 10 % SCORE)	Very high risk (≥ 10 % SCORE)
LDL < 3 mmol/l	LDL < 2,6 mmol/l	LDL < 1,8 mmol/l (> 50% decrease)	LDL < 1,4 (> 50% decrease)
Non HDL < 3,8	Non HDL < 3,4	Non HDL < 2,6	Non HDL < 2,2
	Apo B < 1 g/l	Apo B < 0,8 g/l	Apo B < 0,65 g/l

Non HDL chol is better predictor in people with hypertriglyceridaemia

Diabetes targets (type 2. in 92 %)

Target:	HbA1c*	< 45-53 mmol/mol
	Fasting glycaemia	< 6,0 mmol/l
	Postprandial	< 7,5 mmol/l

High CVR, macro and micro vascular complications (individual):

Target:	HbA1c	< 60 mmol/mol
	Fasting glycaemia	< 8,0 mmol/l
	Postprandial	< 9,0 mmol/l

*** Treatment adjustment if HbA1c is over 53 mmol/mol**

http://www.diab.cz/dokumenty/dm2_12.pdf
Doporučení ČDS pro léčbu DM 2. typu 2012

Treatment of hypertension

- Lifestyl changes
- Pharmacological treatment

Lifestyl changes

- Smoking cesation
- Weight reduction (BMI 20-25, waist < 88 cm F, < 102 cm M)
  Idealy: waist < 80 cm F, < 94 cm M
- Physical aerobic exercise (30-45 min daily, important!)
- Moderate alcohol consumption (20-30g/daily)
- Salt restriction (5-6 g/day)
- DASH diet (a diet rich in fruits, vegetables, and low-fat dairy products, with a reduced content of dietary cholesterol as well as saturated and total fat)

Pharmacological treatment

First choice of antihypertensive drug: (EBM)

- Calcium channel blockers (CaB)
- Angiotensin convertase inhibitors (ACEI)
- AT_1 – blockers (sartans)
- Diuretics (D)
- Betablockers (BB)

Others drugs for combination treatment:

- alfa-blockers
- other sympatetic drugs (urapidil, moxonidin, rilmenidin)

Diuretics

Sulfonamide diuretic (thiazides, thiazide like diuretics)

Indication: heart failure, hypertension in older people, systolic hypertension, hypertension in afroamericans, combination therapy (**chlorthalidone, indapamide**, thiazides)

Contraindication:

absolute: gout

relative: pregnancy, metabolic sy, diabetes mellitus

Diuretics

Loop

Indication: renal failure - CKD, heart failure

Aldosterone antagonists

Indication: HF, MI + HF, **resistant hypertension**, primary aldosteronism

Contraindication:

absolute: hyperkalemia (high level of potassium)

Betablockers

Indication: CAD, angina pectoris, after MI, HF, pregnancy, tachyarrhytmias, glaukom

Contraindication:

absolute: astma, bradycardia below 50/min, AV blok (grade 2 or 3)

relative: CHOPD, PAD, metabolic sy, DM, young and fysicaly active patients

Calcium channel blockers

Dihydropyridines

Indication: older people, systolic hypertension
angina pectoris, PAD, pregnancy,
LVH, combination

Contraindication:

relative: tachyarrhytmia, systolic HF

Calcium channel blockers

Verapamil, diltiazem

Indication: angina pectoris, supraventricular arrhytmias, combination, older age

Contraindication:

absolute: A-V block (grade 2 or 3), systolic HF

Angiotensin-converting enzyme inhibitors (ACEI)

Indication: HF, decreased LVEF, after MI, LVH, diabetic and nondiabetic nephropathy, proteinuria/mikroalbuminuria, metabolic sy, DM

Contraindication:

absolute: pregnancy, hyperkalemia, bilateral renal artery stenosis

AT_1 blockers - sartans

Indication: HF, after MI, diabetic nephropathy, proteinuria/mikroalbuminuria, LVH, atrial fibrilation, metabolic sy, DM, cough by ACEI

Contraindication:

absolute: pregnancy, hyperkalemia, bilateral renal artery stenosis

$Alfa_1$ – blockers

Indication: benign prostate hypertrophy, combination

Contraindication:

absolute: ortostatic hypotension

relative: HF

Sympathetic tone modified drugs: only in combination

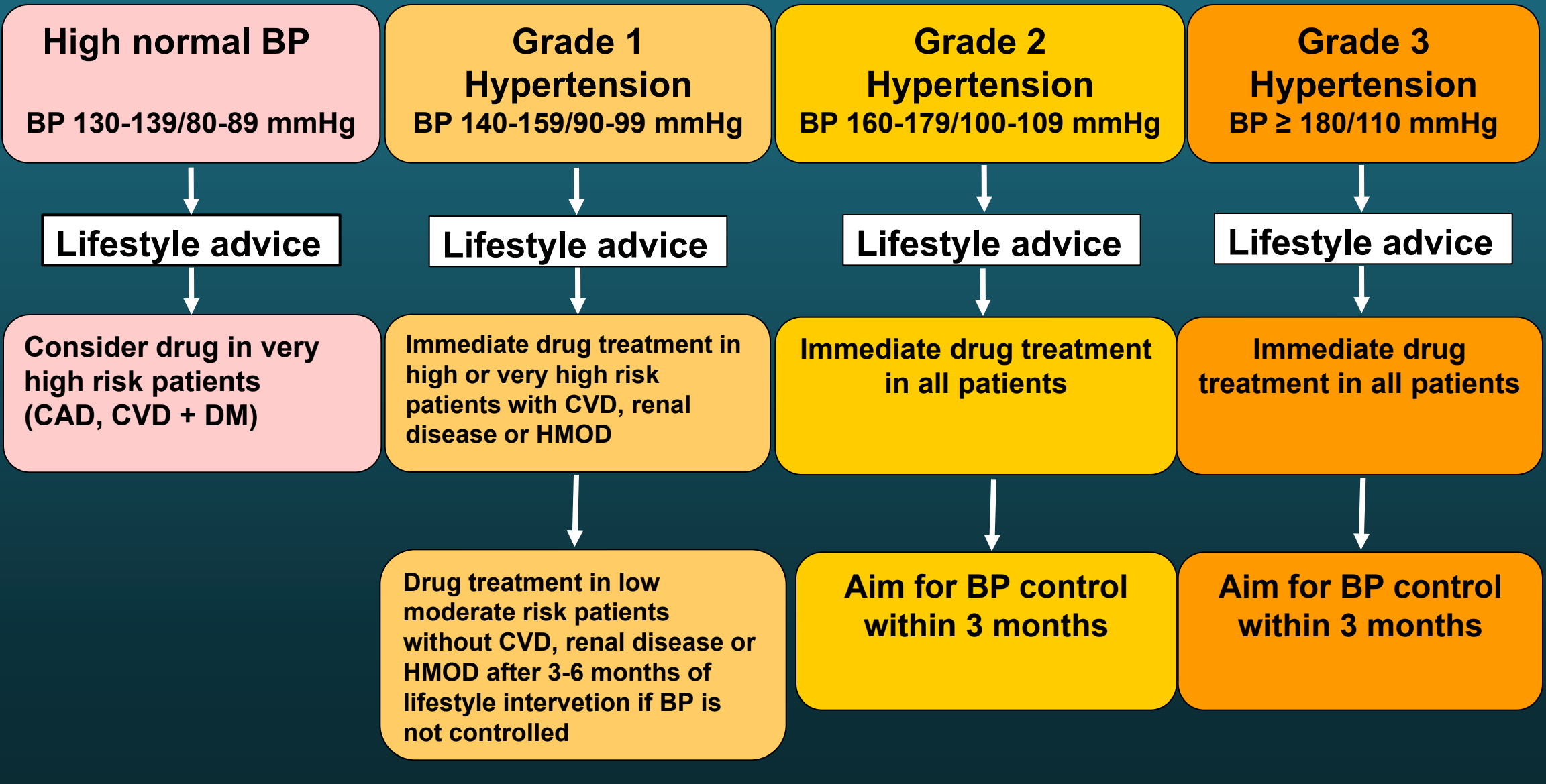
Rilmenidin, moxonidin, urapidil, alfa methyldopa
(did not have randomised mortality trials)

Indication:

hypertension and renal insufficiency
hypertension and metabolic syndrome, DM
hypertension in pregnancy – methyldopa
hypertension and increased sympathetic tone

%

Initiation of treatment hypertension

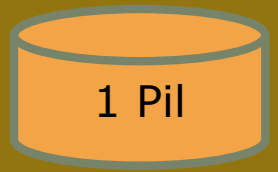


Core drug treatment for uncomplicated hypertension

Initial therapy
Dual combination

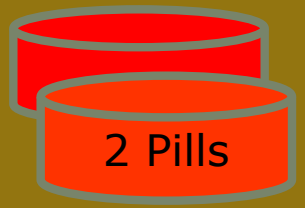
ACE or AT1 + CB or D

Monotherapy if low risc grade I (BP< 150 mmHg) or in very old (80 years) or frailer patients



Step 2
Triple combination

ACE or AT1 + CB + D



Step 3
+ spironolactone
or other drug

Rezistant hypertension
Ad spironolactone 25-50mg 1xd, or other D, alfa bl. or BB

Consider referall to a specialist centre to further investigation

Beta-blockers
Consider treatment in each step if is specific indications
(AP, after MI, HF, AF, young women with childbearing potential, high aktivity of SNS)

Older people and hypertension

Target BP < 140/90 mmHg if tolerated

In patients up to 80 years of age, target BP < 150/90 mmHg

Gradual treatment, start with low doses

BP measure in both: sitting and standing positions

Periodically clinical controls

- **Stable hypertension:**
  1x in 3 months
  1x in 6 months (low CVR, on monotherapy)

- **Complicated hypertension, changes of therapy**
  1x in 4 - 6 weeks

After 6 months of uncontroled hypertension by GP – there is indication to examination in hypertension clinic.